

ATOMIC ENERGY *newsletter*

THE FIRST AND ONLY ATOMIC NEWS SERVICE

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Dear Sir:

Reflecting the increasing expansion of the U.S. atomic energy program, the Tennessee Valley Authority has now stated (1952 Annual Report) that the total amount of TVA power to be used by the USAEC will be 24 billion kwh a year; TVA supplies Oak Ridge, Paducah, and other USAEC plants in the general vicinity. TVA explained that the greatest single factor in the rapid increase in demand for power in the Tennessee Valley region was the USAEC. This, it said, motivated to some extent its present construction which will more than double the installed capacity of the power system from 3,859,910 kw at the end of the fiscal year to 9,600,000 kw by January, 1956.

Some \$2 million have been allocated by the Federal Civil Defense Administration for procurement of medical items, and \$1 million for technical items. It has already earmarked \$17 million for blood and plasma programs. The Administration now points out that the \$20 million given it for stockpiling has thus been completely utilized.

An intensive two-day training course to provide the basic knowledge to utilize Cobalt-60 sources in industrial radiography (non-destructive testing, etc.) is now being offered by the nuclear products firm, Tracerlab, Inc., Boston, Mass. The firm feels that the course is needed because of the growing use of Cobalt-60 as a non-destructive testing means, and the inability of industry to obtain competent radiographers skilled in the use of gamma radiation. The course of study covers such topics as radiological safety, handling of sources, technique of exposure, the use of films and screens, use of radiation survey meters, actual practice in exposing, developing, and evaluation of film, and other pertinent aspects of industrial radiography.

A jurisdictional dispute between two American Federation of Labor unions has impeded work on the prototype submarine nuclear reactor under construction at Knolls Atomic Power Laboratory, near Schenectady, N. Y., with the National Labor Relations Board acting to settle the dispute. The tie-up stemmed from the refusal of members of the Schenectady Building Trades Council, AFL, to work on certain phases of the prototype submarine reactor project unless they also worked on the installation of equipment inside the submarine hull. The equipping of the hull was being done by members of the Groton, Conn., Metal Trades Council, AFL, from the Groton plant of the Electric Boat Division of General Dynamics Corp. The Navy and the USAEC feel that the prototype should be built and equipped by the same men who will make the finished submarine at the Groton works of Electric Boat.

A prototype teletherapy unit, for handling either radioactive cesium, europium, or cobalt, is to be constructed for the Oak Ridge Institute of Nuclear Studies (and cooperating medical schools) by W. F. and John Barnes Co., Rockford, Ill., under a contract recently awarded the Barnes firm. The mechanism to be constructed will be a single-source, multi-curie unit slung from an overhead track and capable of a great variety of controlled-beam movements.

BUSINESS NEWS...in the nuclear energy field...

COMMERCIAL APPLICATIONS OF NUCLEAR ENERGY URGED- The National Security Resources Board has now recommended that the Atomic Energy Act (1946) be amended so that private interests could operate commercially to benefit from their atomic power research, development, and production. The report was released last week by the Board which, six months ago, had been asked to draw up a program implementing the findings of the President's Materials Policy Commission. The Board claimed that interest of industry in participating in atomic power development is retarded by uncertainties as to how it would be permitted to use its results. These uncertainties, it explained, stem from provisions of the Atomic Energy Act which prohibit private ownership of facilities capable of producing fissionable materials in a reasonable time in quantities as large as that used in any atomic weapon. Other provisions of the act which cause such uncertainties, the Board stated, are that the USAEC cannot license civilian users until ninety days after a report to Congress, and that the USAEC has the right to condemn any pertinent invention or patent.

The report observed that the Department of the Interior favored the principle of obtaining economically feasible ways for obtaining electric power from atomic sources. The Department told the Board that when further cooperative arrangements for development work between the USAEC and electric utilities are to be undertaken, the USAEC should give consideration to arrangements that might be made with municipal agencies, public utility districts, and Federal power agencies.

Since Congress made provision, in 1946, for periodic revision of the Atomic Energy Act, the Board recommended that the President direct the USAEC, in consultation with interested Federal agencies, to draft for submission to Congress an amendment to the Atomic Energy Act. This amendment, it stated, should specify the conditions, including patent rights, availability of fissionable materials, and allocation of costs as between industrial power and weapons, under which private interests could operate commercially to benefit from their atomic power research, development and production.

The Board further advised in its report that the prevailing cooperative arrangement between the USAEC and private industry be continued to a maximum degree consistent with security: this has been the advice also of the Materials Policy Commission.

CURRENT NUCLEAR PROGRESS DISCUSSED- The Mark I Project, which describes the first nuclear power plant for submarines which Westinghouse Electric is constructing at Bettis Field, Pittsburgh, is well toward completion, Charles H. Weaver, Westinghouse's manager of its atomic power division told a National Association of Manufacturers meeting in New York the first week this month. A second nuclear power plant, to propel the Navy submarine SS-571, is also well under way, he stated. Mr. Weaver said that the nuclear power plant "will enable undersea craft to go further and faster than was ever dreamed possible".

Many technical problems must be licked in order to get costs down, L. R. Hafstad director of reactor development for the USAEC told the meeting. One is shielding of radiation from the reactor. Others are finding the structural materials that will stand up under great heat and neutron bombardment, and the handling of radioactive wastes from the reactors. Solving these problems now makes reactors expensive, he explained. He said that the homogeneous reactor, or a reactor where the fuel and moderator are in solution, will shortly be tested at Oak Ridge. Results from initial operation of the experimental breeder reactor at Arco, Idaho, the National Reactor Testing Station, are "encouraging", Mr. Hafstad declared.

Growth of the radiation instruments business now makes it a \$15 million dollar a year operation, Dr. W. L. Davidson director of office of industrial development, USAEC, told the meeting. He also cited other instances of business activity resulting from the nuclear energy program. The atomic program has given rise to the uranium mining industry, he stated, commercialization of fluorocarbon liquids and plastics, the synthesis and sale of tagged molecules, and industrial production of zirconium metal. Discussing costs, Dr. Davidson stated that a relatively small "packaged" power reactor will run from \$3 to \$5 million, and a large central power station will operate 50 to 150 of these units.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

FROM THE MANUFACTURERS- Model 180 Rediscaler is a low-cost scaler said to be precision-built and to have the same quality as more costly instruments. Can be used with all standard G-M probes and sample counters. G-M input sensitivity is $\frac{1}{2}$ -volt. The stabilized high-voltage has less than 0.05% variation in high voltage for line voltage changes of 1% between 95 and 130 volts. Counts are recorded on built-in counter; provision is made, in the rear of the unit, for plugging in a timer. Overall size of the unit is 10"x9 $\frac{1}{2}$ "x13 $\frac{1}{4}$ ".-- Nuclear Instrument & Chemical Corp., Chicago 10, Ill.

NOTES-A new beta ray spectrometer, said to be the first such instrument of this type to be commercially produced in the world, has been completed by the Stockholm firm of LKB Produkter. To be used for basic research in nuclear physics, it is capable of measuring energies up to 7 million electron-volts. It is one of a series of five which have been ordered by scientific institutions in France, India, and South Africa. The new spectrometer was developed by Kai Siegbahn of the Institute of Technology and Hilding Slatis of the Nobel Institute of Physics. It consists of three main parts: a main unit, a control panel, and a 36-kw. generator-transformer. The main unit, which has the shape of a cylinder about 3-feet long, is placed on a column housing an electromagnetic coil system encasing a vacuum chamber. Before the instrument starts operating, the vacuum is brought down to 1/10,000th of a mm. by means of a diffusion pump. The sample to be tested is inserted into the vacuum chamber at one end of the cylinder. By varying the current in the coil, it is possible to determine the number of electrons of different energies contained in the test sample, and thus arrive at the beta spectrum characteristics of the isotope under observation.

A high sensitivity gamma radiation detector, known as the Welch Allyn Type GR Counter, is being made under license from Texaco Development Corp., by Welch Allyn, Inc. Because of the cup-like construction employed, the counter serves as a container for the sample, and permits the use of comparatively large samples with consequently simplified sample preparation. When samples are accurately positioned in the holder, sensitivity is said to be nearly independent of sample size.

A new line of Geiger-Muller tubes being produced by The General Electric Co., Ltd. (England) are said to have longer life, larger pulse amplitude, and lower operating voltage as outstanding characteristics. Of the halogen quenched type, the new tubes have an operating voltage of about 450-volts.

IONIZING RADIATION...news & notes...

Stanford Research Institute has now received the largest radioactive source outside of installations of the USAEC with the recent arrival there of a Cobalt-60 4500 curie gamma emitter. Produced at Brookhaven National Laboratory, L.I., the source itself comprises four cylinders and a rod, each a foot long, which can be nested or used in various combinations. The five units are separately rated at 1480, 1200, 1100, 680, and 110 curies. Some 237 days in the Brookhaven reactor were required to activate the cobalt lengths. Ralph A. Krause, general manager of SRI's research divisions, said that staff radiation engineers would shortly begin experiments with the Cobalt-60 to develop industrial uses for large amounts of radiation. Some of the most promising uses include the nondestructive testing of metal castings and parts (radiography) and the cold sterilization of heat-sensitive foods and drugs. According to Mr. Krause, service will be provided companies wishing to explore uses of radiation for their processes or products. Samples may be sent to Stanford Research Institute for irradiation at specified intensity and duration. Consideration will be given to the economics and industrial practicability of the processes and studies. Sub-pilot plant operation will be possible with the source now at SRI.

Rutin, a substance which has been used by the medical profession for capillary fragility, and which is said to be potentially useful in counteracting the effects of high energy radiations, has been found to be present in the pollen of the date palm. The announcement was made jointly by researchers of the College of Pharmacy, University of Calif., and of the Kasr El Aini Faculty, Cairo, Egypt,. The present source of rutin is buckwheat.

RAW MATERIALS...radioactive minerals for nuclear work...

CANADA-A uranium staking rush has developed in the Marian River country, some 95-miles northwest of the town of Yellowknife. The rush was the result of news leaking out of intensive staking having been done by a Toronto syndicate which acquired in the area a total of 96-claims in a continuous block along the favorable formation for a distance of 7½ miles.....According to Franc Joubin, managing director of Amax Athabasca Uranium Mines, drilling at the north boundary at this property (by Leadridge Mining Co.) showed some attractive values before the program was terminated for the Winter about Nov. 1st. Leadridge is a subsidiary of St. Joseph Lead Co.; it is engaged in assessing the whole Amax picture at the present, and may offer to continue work under a revision of its previous agreement, Mr. Joubin states. Work on both Amax and adjoining Aurora Uranium & Gold Mines, has seen some \$246,000 spent by Leadridge. Best showings so far were 0.2% uranium oxide over nine feet near the bottom of one hole sunk; other values found ran 0.19% and 0.125%..... Beaver Lodge Uranium Mines shareholders were told at the annual meeting, held recently, that pitchblende outcrops have been located in surface work for a lateral extent of about 1,500-ft. on the no. 5 vein, on the company's property in the Beaver Lodge area, Lake Athabaska, Northern Saskatchewan. James Mackee, Beaver Lodge president, who described this finding at the annual meeting, said that definite pitchblende shoots up to 5.5 ins. wide and varying 4-28-ft. long, have been observed. He stated that diamond drilling has indicated their persistence at depth, and that underground work is checking these indications. If the property is brought into production, Mr. Mackee explained, an aerial tramway would be used to deliver material to Eldorado's mill, which is one-half mile away.....At Iso Uranium Mines, which adjoins on two sides the property of Gunnar Gold and Associates, in the St. Mary's Channel section of the Athabaska uranium area, preliminary surface sampling of known radioactive occurrences is nearing completion, an official of Iso has stated. The general geology of Iso is said to be similar to Gunnar, where uranium findings have generated unusual interest.....In a reversal of the usual form, an oil company has now entered the uranium exploration field: Dominion Minerals Development, Ltd., which owns oil leases and reservations in Alberta, has now acquired all issued and unissued stock of Canadian Northland Explorations, Ltd., through an exchange of stock with the latter firm. The Candian Northland properties are in four groups, totaling more than 2,200 acres in 43-claims. They are uranium prospects, in the Lake Athabaska area, Northern Saskatchewan. Two groups, totaling 22 claims, are located in the Milliken Lake area. The remaining groups are in the Donaldson Lake area. Exploration plans are now being worked out, the company states.

INDIA- The plant for the manufacture of rare earth compounds, which was set up by the Atomic Energy Commission of India in Travancore State, is expected to go into production shortly. About 1500 tons of monazite sand would be processed each year at the plant; among the by-products would be 1000-tons of rare earth chlorides, and 450-tons of rare earth carbonates. About 1500 to 1800 tons of tri-sodium phosphate, and caustic soda lye (10 to 12% solution) would also be obtained, as well as thorium nitrate amounting to 205 to 228 tons. Another plant for production of uranium and thorium compounds is to be set up shortly. This factory is expected to be self-supporting, and will meet its operating cost through the sale of thorium compounds to the gas mantle industry. Raw materials used will be uranium-bearing ores, and thorium-bearing residues of Indian Rare Earths, Ltd., Alwaye.

UNION OF SOUTH AFRICA-The Union's first uranium production plant has now been opened by the Prime Minister at the property of West Rand Consolidated Mines, Ltd., Krugersdorp. All uranium recovered will be sold to the South African Atomic Energy Board. While the government intends to export all the uranium oxide produced in the Union for the time being, under the agreement with the United Kingdom and the United States, as much uranium as may be required for the Union's own purposes may be retained. (There are at present 13 mines which have contracted to supply uranium shortly; 4 more are expected to be added to this number. The capital cost of the plant for each mines varies from the \$4,480,000 which was the cost of the plant at West Rand Consolidated, up to sums of the order of \$14,800,000.)

ATOMIC PATENT DIGEST...latest U. S. patent grants...

Analyzer. An analyzing apparatus to scribe a single plot of the relation between two variables. U. S. Pat. No. 2, 620,256 issued December 2, 1952; assigned to United States of America (USAEC).

Radiation detection and measuring means. Ratemeter for measuring a wide range of radioactivity intensity levels. Comprises a radiation detector tube, with associated circuitry. U. S. Pat. No. 2,620,446 issued December 2, 1952; assigned to United States of America (USAEC).

Ion source. (Apparatus for developing ions from a vapor.) Comprises a vapor generator, means for heating it to vaporize the source material, and associated devices to maintain the process as a continuous operation in a vacuum. U. S. Pat. No. 2,621,296 issued December 9, 1952; assigned to United States of America (USAEC).

Receptacle. In part, a square container comprising a perforated conical bottom wall projecting into the container, internal baffles extending into the container from each corner, and extending along each side wall approximately midway between the adjacent corners, the baffles extending from the bottom to the top thereof. U. S. Pat. No. 2,621,912 issued December 16, 1952; assigned to United States of America (USAEC)

Production of carbon dioxide. Comprising, in part, mixing a carbonate salt of an alkaline earth metal, in the dry, with a dry anhydrous halide salt, heating the mixture at a temperature sufficient to liberate carbon dioxide, and separating the carbon dioxide as a dry, pure, gas. U. S. Pat. No. 2,622,008, issued December 16, 1952; assigned to United States of America (USAEC).

Method for preparing boron trifluoride. Comprises, in part, heating together an oxide of boron and a metallic fluorinating agent, and collecting the boron trifluoride gas evolved. U. S. Pat. No. 2,622,014 issued December 16, 1952; assigned to United States of America (USAEC).

Automatic cable tester or fault analyzer. An automatic test system for testing each of a plurality of wires in a cable. U. S. Pat. No. 2,622,130 issued December 16, 1952; assigned to United States of America (USAEC).

Mass spectrograph. A unitary sub-assembly for a mass spectrograph. Comprises, in part, a supporting element, spaced entrant and exit collimating slits mounted on the supporting element, an intermediate condenser collimating slit mounted on the supporting element, and spaced condenser plates mounted on the supporting element, and insulated from it, defining a path between the plates. U. S. Pat. No. 2,622,204 issued December 16, 1952; assigned to United States of America (USAEC).

Radiation monitoring device. An instrument for indicating and measuring ionizing radiations. The combination (in part) of an ionization chamber, an electrostatic charge measuring device secured within this ionization chamber, a gravity operated electromechanical charging apparatus mounted on the housing, and selectively movable switching means supported by the housing for selectively connecting the output of this charging apparatus to the electrostatic charge measuring device for charging it to a desired electric potential. U. S. Pat. No. 2,622,207 issued December 16, 1952; assigned to United States of America (USAEC).

Radioactive particle counting. A separable apparatus for counting radioactive particles. U. S. Pat. No. 2,622,208 issued December 16, 1952; assigned to United States of America (USAEC).

Radiographic inspection device. A holder device for radiographic inspection of normally enclosed objects, such as pipe or the like. The combination comprises a hollow member to be inspected, having a survey aperture, a base member having a threaded shank, and an opening therethrough, the base member being mounted in a wall of the member to be inspected, a predeterminedly formed rod adjustably mounted in the opening of the base member, and extending into the hollow member, and means on the end of the rod for carrying a radioactive substance or the like. U. S. Pat. No. 2,622,209 issued December 16, 1952; assigned to Crane, Co., Chicago, Ill.

Sincerely,

The Staff
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